ADDO/Facit N1068

NC Satellite

User's Manual

Edition 2.0

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1 Introduction

The ADDO/Facit N1068 is a light weight, portable unit intended for storing and transferring NC-programs in connection with NC-equipment and computers.

The medium for storing data is a USB-Disk (USB-Drive).
Three types of file system can be used, one with FAT12, two with FAT16, and the other with FAT32. The capacity of a USB-Disk less than 4GB can be used.

The ADDO/Facit N1068 is not available to Format a USB-Disk, Copy Data files and Delete Directories.

The ADDO/Facit N1068 is available to use sub-directories however the files transferred with output of files from a list or with output of files by sub-program function must be stored on the same directory.

The maximum number of files and directories stored on the root directory is 511.
The maximum number of files and directories stored on a sub-directory is 509.
The maximum number of directory passes on a USB-Disk is 32767.

When the parameter values are stored on the disk, the values are saved into the current directory as a file named “parm”.
Changing current directory, the parameter values are automatically read into the RAM if the file named “parm” will exist in the alternated directory and then the parameter values in the RAM are used.

This “User’s manual Edition 2.0” applies for the System program version later than V.J30.

Power adapter

The ADDO/Facit N1068 has no built in Power Supply. Power can be fed in three ways:

1. Either via a chassis connector on the upper short side of the ADDO/Facit N1068.
   In this case an external Mains Adapter has to be used, capable of delivering 9-24V DC, 10W. See section 6 Specifications.

2. Via pin 9 of the 9-pins RS-232-C Interface cable i.e. from the host.

3. Via pin 25 of the 25-pins RS-232-C Interface cable i.e. from the host.

1.1 How to start the N1068

At delivery the ADDO/Facit N1068 has installed English version.

1. Connect the Mains adapter to the Mains outlet.

2. Connect the DC connector from the Mains adapter to the ADDO/Facit N1068

   or

3. Connect a V.24/RS-232-C cable having +24V connected at pin 9 or pin 25 (See section 4 Interface) to the V.24/RS-232-C connector

4. Turn the N1068 ON. The display shows:

```
   Welcome to
ADDO/Facit N1068
        L.0916c
   RAM Test:xxxK
```

5. Finished RAM Test:512K.
   If a System disk is inserted, the Display shows:

```
ADDO/Facit N1068
 Loading System
   from USB-Disk
```

   If a System disk not is inserted, the Display shows:

```
ADDO/Facit N1068
 Loading System
  from Flash ROM
```

6. When the System program is loaded the Display shows:

```
N1068.    V.XXXrr
Ready off Line
Remote<Protocol>
<Date> HH:mm:ss
```

7. At delivery a Default Parameter Set is stored into the internal C-MOS RAM.
   Check if these parameters are OK for your purpose (See table below), otherwise proceed to the Parameter Set Up, (Section 3.1).

Default Parameter settings

Interface:	RS-232-C (V.24)
Code:	ISO
Current Loop Mark:	Ready
Input File Mark Start:	%
Input File Mark End:	%
Output File Mark Start:	None
Output File Mark End:	None
Input File Mark Include:	Yes
Baud Rate:	9600
Protocol:	XON/XOFF
XOFF-value:	0x13h
Stop Bits:	1
Automatic name:	No
EOB-Character:	CR-LF
Leader:	None
Leader Character:	Feed hole (NUL)
Trailer:	None
Trailer Character:	Feed hole (NUL)
Extension:	NWD
M98P Command:	None
Back light:	On
Date:	YYMMDD
Time:	HH:mm:ss
Save Parameters:	Store disk

8. Select the desired function, for example OUTPUT, by pressing the proper Function key. (See section 3.4)

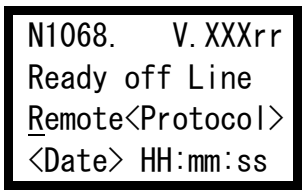
1.2 Selection of mode

When the ADDO/Facit N1068 is started 2 modes can be selected:

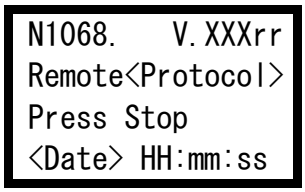
Off line or Remote.
Default is always OFF line, which is N1068 started operation.

1.2.1 In Off line (Default mode) all standard operations can be immediately accessed.

To change mode press <Step> and cursor moves to Remote:



Now press <Select> and displays changes to:



Press <Stop> to go back to OFF line mode.

1.2.2 Remote mode

Remote Mode means that the selected remote protocol can be used.
There are now three protocols available.
Special information is available for the remote protocols.

2 Keyboard

The keyboard layout is shown in the picture below.

Operation keys:

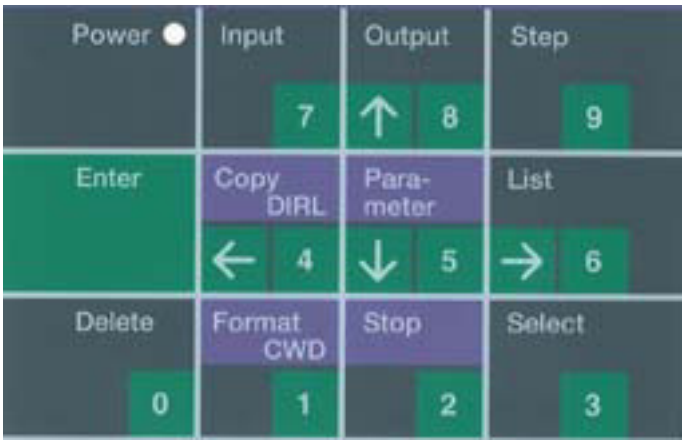


Figure 2

<Input>:	For input of data.
<Output>:	For output of data.
<List>:	Provides a Directory list.
<Enter>:	To enter File Names (Digits or Letters). To show detail of a file in List function, Input/Output and Delete function.
<Step>:	"Step" the Directory list or Sub-Directories list. Also used for stepping the Parameter values.
<Select>:	For selecting Files and Parameters.
<Delete>:	For deleting One or All Files.
<Copy/DIRL>:	Provides Sub-Directories list. Does not provide Copy function.
<Format/CWD>:	Provides Current Directory shown in Tree. Does not provide Format function.
<Parameter>:	For setting Parameter values.
<Stop>:	To stop an operation. Return to Ready position.
<Numeric Keys>0-9:	For Numeric File Name entry.
< ↑ > / < ↓ >:	To step through files in List function, Input/Output and Delete function. To step through sub-directories in DIRL function. To step in Letter Mode, To step the parameter values.
<←> / <→>:	To step every four files in List function, Input/Output and Delete function. To step every four sub-directories in DIRL function. Used for stepping the Parameter values. Also used to step in Letter Mode.

3 Functions

The functions of the ADDO/Facit N1068 can be divided into two groups.

1. Parameter setting

Interface
Code
Current Loop Mark
Input File Mark
Output File Mark
Baud rate
Protocol
XOFF=13/93
Stop bits
Automatic Filename Generation
EOB-Character
Leader/Trailer
Extension
M98P function
Back light
Date
Time

2. File handling

Input
Output
List
Capacity
Delete

3.1 Parameter set up

The Parameter setting function is selected by pressing the Parameter key.
There are seventeen groups of parameter settings i.e.

Interface
Code
Current Loop Mark
Input File Mark
Output File Mark
Baud rate
Protocol
XOFF=13/93
Stop bits
Automatic Filename Generation
EOB-Character
Leader/Trailer
Extension
M98P function
Back light
Date
Time

3.1.1 Interface

Two different Interfaces can be selected:

RS-232-C (V.24), Serial
Current Loop 20mA, Serial

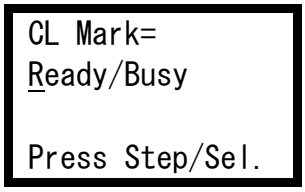
Note: Current Loop is optional.

When the Parameter key is pressed the following is shown on the Display:

_ indicates the cursor position

By means of the <Step> or the Arrow keys the Cursor can be moved to the Interface to be selected. The <Select> key is then used to select the Interface.

When Current Loop has been selected, the following parameter should be set:



_ indicates the cursor position

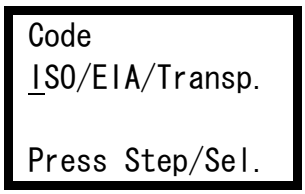
When Ready is selected the READY status of the current Loop interface is indicated/sensed as Current.
When Busy is selected the BUSY status of the current Loop interface is indicated/sensed as Current.

3.1.2 Code

Three settings for the code are available i.e.

ISO:	8 bits, Even parity included
EIA:	8 bits, Odd parity included
Transparent:	8 bits, No parity

When the Interface has been selected the ADDO/Facit N1068 automatically steps to:



_ indicates the cursor position

The proper code is selected by means of the <Step> or Arrow keys and <Select> key.

3.1.3 File Mark

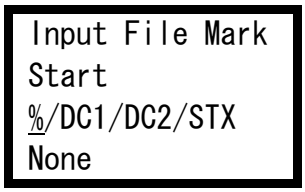
Start and End File Marks for both Input and Output can be set.
A choice can also be made whether to include the File Marks in the saved file or not.

The following File Marks are available;

Input, Start	: %, DC1, DC2, STX and None.
Input, End	: %, DC3, DC4, M30, ETX and None.
Output, Start	: %, DC1, DC2, STX and None.
Output, End	: %, DC3, DC4, M30, ETX and None.

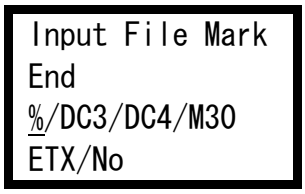
The Display shows;

For Input Start File Mark:



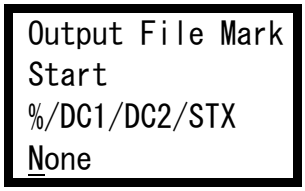
_ indicates the cursor position

For Input End File Mark:



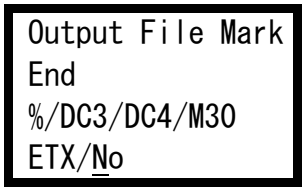
_ indicates the cursor position

For Output Start File Mark:



_ indicates the cursor position

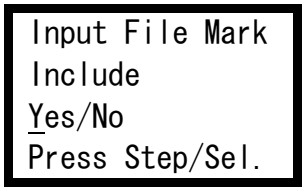
For Output End File Mark:



_ indicates the cursor position

The File Marks are stepped to by stepping with the <Step> or the Arrow keys and selected with the <Select> key.

When the Input File Marks have been set, the Display shows:



_ indicates the cursor position

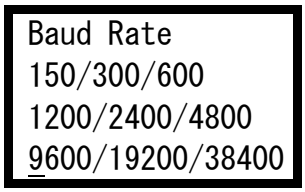
YES or NO is selected by means of the <Step> and <Select> keys.

When YES is selected the Input File Marks will be stored in the file.

When all File Marks have been set, the ADDO/Facit N1068 will proceed to BAUD RATE.

3.1.4 Baud Rate

The Display shows:

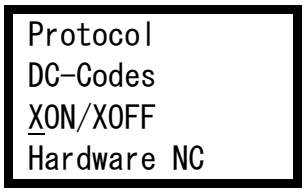


_ indicates the cursor position

The <Step> or the Arrow keys are used to step to the desired Baud Rate which is then selected by the <Select> key.

3.1.5 Protocol

When the Baud Rate has been set the Display shows:



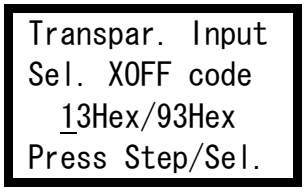
_ indicates the cursor position

Four different protocols can be selected.
- DC-Codes
- XON/XOFF
- Hardware
- NC

The <Step> or the Arrow keys are used to step to the desired Protocol which is then selected by the <Select> key. See section 5 Protocols.

3.1.6 XOFF=13/93

In Transparent mode the XOFF can be set to either 13 Hex or 93 Hex.
The Display shows:

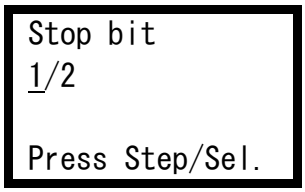


_ indicates the cursor position

The <Step> or the Arrow keys are used to step to the desired XOFF value which is then selected by the <Select> key.

3.1.7 Stop bits

When XOFF has been set the Display shows:



_ indicates the cursor position

The <Step> or the Arrow keys are used to step to the desired number of Stop bits which is then selected by the <Select> key.

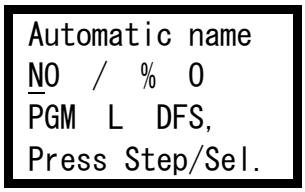
3.1.8 Undo

When the parameter has been set by means of the <Select> key, it is possible to "Undo" this setting by pressing the < ↑ >key.
The parameter group last set will then appear on the Display.

3.1.9 Automatic name

With this function you can generate a filename in the N1068 from the incoming data.
This function is only active during input to the N1068.

The following settings are available.

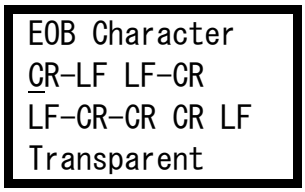


_ indicates the cursor position

NO is the default value.
The <Step> or the Arrow keys are used to step to the desired value which is then selected by the <Select> key.

3.1.10 EOB-character

The Display shows:



_ indicates the cursor position

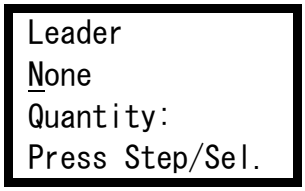
A parameter to convert CR-LF (carriage return, line feed) to one of the parameters above during output from N1068.
During input the N1068 looks for the first CR or LF and this character is converted to CR-LF.

Transparent means no conversion of EOB character.

The <Step> or the Arrow keys are used to step to the desired EOB-characters.
Press the <Select> key and you move to the next parameter in the parameter list.

3.1.11 Leader

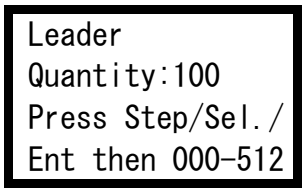
The Display shows:



_ indicates the cursor position

With this parameter you select the number of characters sent before a file (leaders), during output from N1068.
The <Step> or Arrow keys are used to step between None (no leaders) and quantity.
If none is desired, step to None and press the <Select> key.
You move to the parameter trailer.

If leader is desired, step to quantity, press <Enter> and input the number of characters.
The number can be between 1-512. Enter 1, 2 or 3 digits and press the <Enter> key.
You move to the next parameter in the parameter list.
The default value for Leader is None.

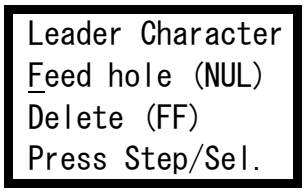


_ indicates the cursor position

If a quantity is selected and you want to change to None, Press the <Step> key and press the <Select> key. You move to the parameter trailer.

3.1.12 Leader character

The Display shows:

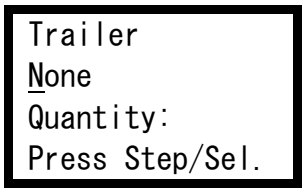


_ indicates the cursor position

By using the <Step> key you can toggle between NUL (Feed hole) and FF (Delete). Press the <Select> key to confirm, and you move to the next parameter in the parameter list.

3.1.13 Trailer

The Display shows:

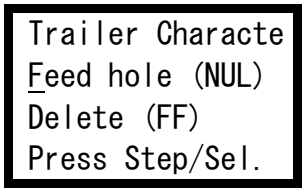


_ indicates the cursor position

The same procedure as for leader but instead of before, the trailer are sent after the file.

3.1.14 Trailer character

The Display shows:

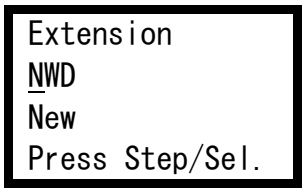


_ indicates the cursor position

The same procedure as for leader character.
The trailer can be either NUL (Feed hole) or FF (Delete).

3.1.15 Extension

There is a parameter to select automatic extension as follows:



_ indicates the cursor position

NWD is default. Press <Step> to go to New. Press <Select> and <Enter> and you will go into Character mode (See Chapter 3.3.4).

If no extension is wanted press <Enter> and New Extension will be blank. If New extension is wanted insert maximum 3 characters as New Extension and press <Select>to confirm each character. (For more information how to enter characters see page 22, chapter 3.3.2 Input with new name (alphanumeric)).

3.1.16 M98P Command

There is a parameter to select how to handle M98P Command.

The <Step> or the Arrow keys are used to step to the desired handling procedure.
Press the <Select> key and you move to the next parameter in the parameter list.
The default value for M98P Command is None.

3.1.17 Back light

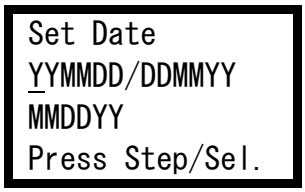
The <Step> key is used to step between back light ON/OFF which is then selected by the <Select> key.

_ indicates the cursor position

Back light OFF means that back light is switched off, when Remote mode is used.
You then normally have no need for the display.

3.1.18 Set Date

Step to method and select by pressing the <Select> key.

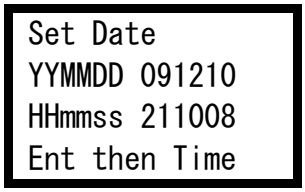


_ indicates the cursor position

Press <Enter> and enter 6 digits and press <Enter>.

3.1.19 Set Time

Press <Enter> and enter 6 digits and press <Enter>.



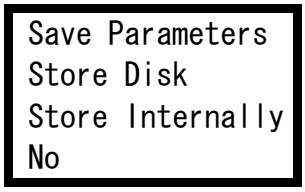
Midnight is 00:00:00.

Default for Date and Time is Japanese Standard Time.

Date and Time appear in the Ready menus.

3.1.20 Saving the Parameters

When the last group of parameters has been set the Display will show:



The <Step> key is used to step between the three values and is then selected by pressing the <Select> key.

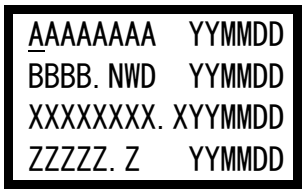
"Store Disk" means that the parameter values are stored into the current directory on the disk. "Store Internally" means that the parameter values are stored internally in C-MOS. "No" means that the parameter values not are stored.
When the N1068 is started the parameter values are read into the RAM if there is a parameter file in the root directory on the disk. If not, the parameter values in the C-MOS are read into the RAM. And then the parameter values in the RAM are used.

3.2 List/Capacity

The List function is used to see which files are stored in the current directory on the Disk and to find out the remaining capacity of the Disk.

3.2.1 List files (Short)

Press <List>, the first 4 files appear on the Display:



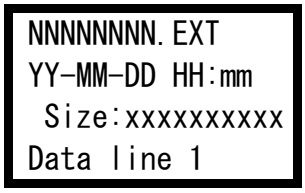
_ indicates the cursor position

When filename with extensions is in full length the date will overwrite part of the Extension.

Press <Step> or < ↑ > or < ↓ > to step into the file list.
Press <→> and the next 4 files will be displayed.
Press <←> and the previous 4 files will be displayed.
By pressing the <Enter> key you can display extended file information and view the file contents. (See Chapter 3.2.2 Viewing a file / Long file names)

3.2.2 Viewing a file / Long file names

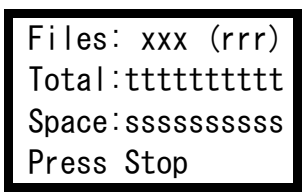
The Display shows:



By pressing <→> you can display the next 4 lines in the file and pressing it again the next 4 lines will be displayed. By pressing <←> you can display the previous 4 lines in the file and pressing it again the previous 4 lines will be displayed.
Pressing < ↓ > or <Step> displays the next file in the file list. Pressing < ↑ > displays the previous file in the file list.
Press <Enter> to get back to the Short Name List.

3.2.3 Capacity

Press <Stop> and the display shows:



Where xxx means existing files and rrr means remaining files and directories.

Press <Stop> again you will return to the Ready-menu.

3.3 Input

Input to the ADDO/Facit N1068 can be done in three ways.

Creating a new file with new name with figures or letters overwriting an old file and automatic filename generation.

3.3.1 Input with new name (Figures)

The input is started by pressing the <Input> key. The Display shows:

```
Input<RS232
Overwrite:Step
New Name:Enter
Press Step/Enter
```

<Enter> is pressed and the N1068 then asks for the File Name.

The File Name can be maximum eight digits long. The N1068 will add the extension NWD or selected.
For example, File Name entered: 12345678, actual File Name: 12345678.NWD.

The File Name is entered by pressing the proper digit keys and then pressing the <Enter> key.

When the File Name has been entered the input starts by pressing the <Input> key.

If the File Name already exists in the current directory on the USB-Disk the following message appears:

```
Input<RS232
File exists
New Name:Step
Overwrite:Select
```

The input is monitored on the Display by showing the transferred number of Bytes.

The input can be halted by pressing the <Stop> key and restarted by pressing <Input>.

To end the Input the <Stop> key must be pressed twice. When Input File Mark end has been selected, the input will be stopped automatically when the File Mark end is sensed.

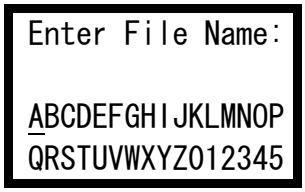
When the input is finished the total File length will be shown on the Display.

3.3.2 Input with new name (alphanumeric)

Input is selected by pressing the <Input> key.
Press <Enter> for new name. Press <Enter> again.

The 2 lower lines will now appear with characters. By pressing the < ↑ > key you get more characters.

The upper line will be used to enter selected characters:



_ indicates the cursor position

Select characters by moving the cursor, by pressing the Arrow keys, to character and then press <Select>. The Selected character will appear on the upper line.

The cursor always starts in the upper line on the first character. To select a new character, go down in the character field and select using the <Select> key.

When the name is finished and cursor is on the latest generated character, press <Enter> again and the name will be stored and used as file name. Input continues as normal.

If you make an error press <Stop> and start with Input again. The entered characters will not make a file name.

Maximum 8 characters can be entered as file name. The following character must be (.), followed by extension.

If no extension is defined an automatically defined extension will be added.
See Extension. (3.1.15)

3.3.3 Input, overwrite

Input is selected by pressing the <Input> key.
The <Step> key is then pressed and the name of the first file in the current directory on the
disk will appear on the Display. The <Step> key or Arrow keys is then used until the file to be overwritten appears on the Display.

The file is selected by pressing the <Select> key and the input started by pressing the <Input> key. The Input can be halted by pressing the <Stop> key and restarted by pressing the <Input> key.

To end the Input the <Stop> key must be pressed twice. When Input File Mark end has been selected, the input will be stopped automatically when the File Mark end is sensed.

3.3.4 Input, automatic filename generation

Note: Automatic filename generation must be selected in the parameter set up.

Input is selected by pressing the <Input> key. The Display shows:

```
Input<RS232
Overwrite:Step
New Name:Enter
Auto Name:Select
```

Press the <Select> key and automatic filename generation is selected.
The Display shows:

```
Input<RS232
Autoname
Space:xxxxxxxxxx
Press Input
```

This function gives you the possibility to name a file from the incoming data.
The filename can be maximum 11 characters long.

"Autoname" is a name for a temporary file, which will be overwritten when the real name is received.

The Input is started by pressing the <Input> key.

The Input can be halted by pressing the <Stop> key and restarted by pressing the <Input> key. To end the Input the <Stop> key must be pressed twice.
When Input File Mark end has been selected, the input will be stopped automatically when the File Mark end is sensed.

There are two possibilities:

1. The filename is written after one of the following file marks:

   /, %, O, PGM, L, DFS,

   The file mark used is selected in parameter set up. The filename has to be in the first line of the file and must only contain valid DOS filename characters,
   A-Z a-z 0-9 $ ' - @ { } ~ ` ! # ( ) &

For example: %1000 (the first line of the file). This file will be named 1000.NWD.

Another example: PGM5555 (the first line of the file). This file will be named 5555.NWD.

The filename can be maximum 11 characters long. If the filename is between 1-8 characters long, the file will get the extension "NWD", or the selected extension.

If the filename is 9 characters long, the file will get the extension "X", where character X is the last character in the filename.

If the filename is 10 characters long, the extension will be "XX".
If the filename is 11 characters long, the extension will be "XXX".

Another example: DFS,12345678901. This file will be named 12345678.901.

If no filename is written after the selected file mark or if no correct file mark exists, the file will be named "1.ERR" and if there already is a file with this name "2.ERR" etc.

2. The automatic filename can also be generated from one line of the file. The filename then must be entered between brackets and started with /.

   For example:

   N10 G0
   N20 (/WHEEL)

   This file will be named WHEEL.NWD

   Another example:

   N10 G0
   N20 (/AAAABBBBCCC)

   This file will be named AAAABBBB.CCC

3.4 Output

There are two ways of outputting files from the N1068;
Output of single file or output of files from a list. The list can be created and then saved for future use.

3.4.1 Output of single file

The Output function is selected by pressing the <Output> key.
The Display shows:

```
Output>RS232
File:Press Step
Name:Press Enter
List:Press List
```

Press <Step> to output a file from the list of files.
The desired file is found by pressing <Step> or Arrow keys repeatedly until the File Name appears on the Display.

The File is selected by pressing the <Select> key and the output started by pressing the <Output> key.

The output file can also be selected by entering the file numeric name on the Keyboard. Press <Output><Enter>, enter the file numeric name and press <Enter><Output>.

The output file can also be selected by entering the filename in letters on the Keyboard. Press <Output><Enter><Enter>, select characters by moving cursor to character and then press <Select>. The selected character will appear on the upper line.
To select a new character go down in the character field and select using the <Select> key. When the name is finished and the cursor is on the latest character selected, press <Enter> and the name will be stored and used as file name.

Output can be halted by pressing the <Stop> key and restarted by pressing the <Output> key.

3.4.2 Creating output list

The creating of an Output list starts by pressing the <Output> and then the <List> key. Press the <Step> key to create a new list. The <Step> or Arrow keys are used to find the first file of the list. When the file is found it is selected by the <Select> key. The selection is indicated by a number e.g. (001) added to the file name. To continue the creation of the list, the <Step> and <select> keys are used.

When the list is complete all selected files are sent by pressing the <Output> key.
The list can be saved, when the files have been sent, pressing the <Enter> key.

3.4.3 Output of old list

An old list can be sent by pressing <Output>, <List> and <Select> and then pressing the <Output> key.

3.4.4 Output of subfiles (subprograms)

A file including subfile can look like this:

ABCD.NWD (filename)

N10 G01X10Y5
N20 G02
*-SUB1.NWD (subfile) SUB1.NWD shall be called
N30 G63X10Y20

Several subprograms can be called from the main program.
The subprogram can call another subprogram.

Note:	Maximum eight levels.

Output of files including subfiles is done in the same way as Output of single file (3.4.1).
A "*-" in the beginning of a line indicates that a subfile shall be called.

Another example:

O1234 (filename)

N10 G01X10Y5
N20 G02
M98P0001 (subfile) O0001 shall be called
N30 G63X10Y20

A "M98P" in the beginning of a line indicates that a subfile shall be called.

Note:	M98P Command must be selected in the parameter set up. (See 3.1.16)

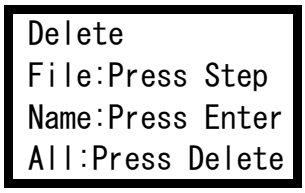
Several subprograms can be called from the main program.
The subprogram can call another subprogram.

Note:	Maximum eight levels.

3.5 Delete

Either a single File or All files can be deleted.

Press the <Delete> key.
The Display shows:



3.5.1 Delete single file

Press <Step> key and the desired file is found by pressing <Step> or Arrow keys repeatedly until the File Name appears on the Display.

Press <Select> key and then <Delete> key.

or

Press <Enter>, enter the file numeric name and press <Enter><Delete>.

or

Press <Enter><Enter>, enter the filename in letters (see 3.3.4 how to enter filename in letters) and press <Enter><Delete>.

3.5.2 Delete all files

Press the <Delete> key.
The Display shows:

Press the <Delete> key again to delete all files in the current directory on the Disk.

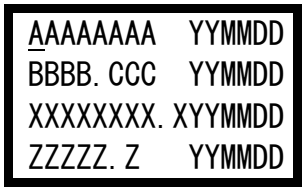
If not delete all files, press the <Stop> key and you will return to the Ready-menu.

3.6 Directory List

The Directory List function is used to see which directories are stored in the current directory on the Disk, move current Directory to another Directory and create a new Directory.

3.6.1 List directories

Press <DIRL>, the first 4 lower directories appear on the Display:



_ indicates the cursor position

When directory name with extensions is in full length the date will overwrite part of the Extension.

Press <Step> or < ↑ > or < ↓ > to step into the directory list.
Press <→> and the next 4 directories will be displayed.
Press <←> and the previous 4 directories will be displayed.

3.6.2 Move current directory

By pressing the <Select> key you can move current directory down to the lower directory indicated by the cursor position.

The Display shows one upper and the first three lower directories.

_ indicates the cursor position

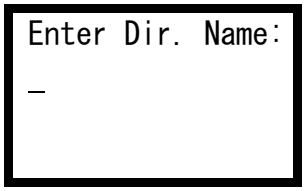
When directory name with extensions is in full length the date will overwrite part of the Extension.

When the cursor locates on the .. position, press the <Select> key and then you can move current directory up to the upper directory.

Press <Step> or < ↑ > or < ↓ > to step into the directory list.
Press <→> and the next 4 directories will be displayed.
Press <←> and the previous 4 directories will be displayed.

3.6.3 Create a new directory

By pressing the <Enter> key you can create a new directory in the current directory.
The Display shows:

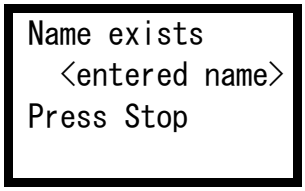


_ indicates the cursor position

The Directory Name is entered by pressing the proper digit keys and then pressing the <Enter> key.

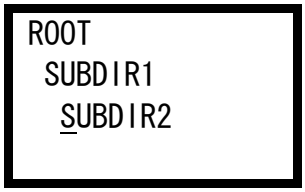
The Directory Name can also be entered by entering the directory name in letters on the Keyboard.
Press <Enter> again, select characters by moving cursor to character and then press <Select>. The selected character will appear on the upper line.
To select a new character go down in the character field and select using the <Select> key.
When the name is finished and the cursor is on the latest character selected, press <Enter> and the name will be stored and used as new directory name.

If the Directory Name already exists in the current directory on the USB-Disk the following message appears:



3.7 Show Directories Tree

Press <CWD>, the Directories Tree appears on the Display:



_ indicates the cursor position and the current directory

Press the <Stop> key and you will return to the Ready-menu.

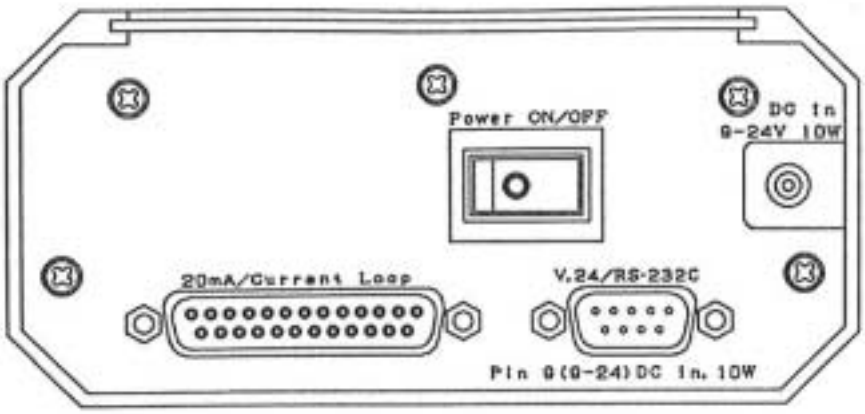
4 Interface

The ADDO/Facit N1068 is equipped with two Interfaces i.e. one serial and one current loop interface. The different interfaces are described below.

Interfaces

1. Serial V.24/RS-232-C

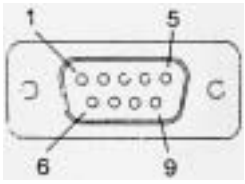
2. 20mA Current Loop

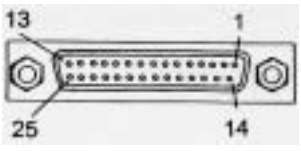


4.1 V.24/RS-232-C serial interface

Data bits: 7 or 8. (Controlled by the Code setting, Section 3.1.2)
Stop bits: 1 or 2.
Parity: Odd, Even, None. (Controlled by the Code setting, Section 3.1.2)
Protocols: Hardware, XON/XOFF, DC-Codes, NC
Baud rates: 150, 300, 600, 1200, 2400, 4800, 9600, 19200 and 38400 Baud.
Connectors: 9-pin male DB-type and 25-pin female DB-type.

Pin configuration:





Dir.	9-pin Male	25-pin Female	N1068 use
		1 FG	
In →	1 CD	6 CD	Ready/Busy (1) for output *
In →	2 RD	3 RD	Input
Out ←	3 TD	2 TD	Output
Out ←	4 RTS	4 RTS	Ready/Busy for input
	5 SG	7 SG	Signal Ground
In →	6 DSR	8 DSR	Ready/Busy (2) for output *
Out ←	7 DTR	20 DTR	Always High
In →	8 CTS	5 CTS	Ready/Busy (0) for output *
In →	9	25	DC+9 ~ 24V external power
* With internal pull up to +10V. Any of these inputs may be used for Ready/Busy signaling for the Output function.			

4.2 Current Loop interface

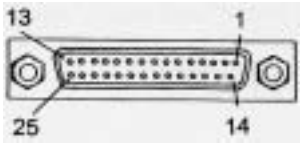
Note: Current Loop Interface is optional.

20mA Passive

Transmit: (A). Data (TD)
(B). Status signals (Ready/Busy levels)
Receive: (C). Data (RD)
(D). Status signals (Ready/Busy levels)
i.e. four different loops.

Status signals: Current=Ready
Data bits: 7 or 8. (Controlled by the Code setting, Section 3.1.2)
Stop bits: 1 or 2.
Parity: Odd, Even, None. (Controlled by the Code setting, Section 3.1.2)
Protocols: Hardware, XON/XOFF, DC-Codes, NC
Baud rates: 150, 300, 600, 1200, 2400, 4800, 9600, 19200 and 38400 Baud.
Connector: 25-pin female DB-type.

Pin configuration:



Dir.	Pin	Signal
In →	14 RD+	Receive Data, + current
In →	15 RD-	Receive Data, - current
In →	13 CTS+	Transmit Status, + current
In →	18 CTS-	Transmit Status, - current
Out ←	16 TD+	Transmit Data, + current
Out ←	17 TD-	Transmit Data, - current
Out ←	19 R/B+	Receive Status, +current
Out ←	23 R/B-	Receive Status, - current

5 Protocols

Four types of protocols are available:

1. DC-codes
2. XON/XOFF
3. Hardware
4. NC

5.1 DC-codes

IN

When the <Input> key is pressed, a XON (DC1, 0x11h) code is sent.
At busy, the input is then stopped by XOFF (DC3, 0x13h or 0x93h) is sent.
And at ready, the input is then restarted by XON (DC1, 0x11h) code is sent.

OUT

When the <Output> key is pressed the transmission of data will not start until a XON (DC1, 0x11h) code has been received.
The transmission is then stopped by XOFF (DC3, 0x13h or 0x93h) code has been received.
And the transmission is then restarted by XON (DC1, 0x11h) has been received.

5.2 XON/XOFF

IN

When the <Input> key is pressed, the input will start immediately.
At busy, the input is then stopped by XOFF (DC3, 0x13h or 0x93h) is sent.
And at ready, the input is then restarted by XON (DC1, 0x11h) code is sent.

OUT

When the <Output> key is pressed the transmission of data will start immediately.
The transmission is then stopped by XOFF (DC3, 0x13h or 0x93h) code has been received.
And the transmission is then restarted by XON (DC1, 0x11h) has been received.

5.3 Hardware

IN

When the Hardware protocol is selected the Input of data to the N1068 is controlled by means of the RTS signal of the RS-232-C interface.
The RTS signal is HIGH when the N1068 is Ready and LOW when the N1068 is Busy.

OUT

When the Hardware protocol is selected the Output of data from the N1068 is controlled by means of Ready/Busy signals from the host are monitored at CTS, DSR or CD signals of the RS-232-C interface.
When they are Not Connected they are held at +10V (HIGH) by internal pull-up resistors of 10KΩ. See section 4 interface.

5.4 NC

NC is a combined protocol which means one type for output and one type for input as follows:

IN

Input of data to the N1068, Hardware protocol is used.
The Input of data is controlled by means of the RTS signal of the RS-232-C interface.
The RTS signal is HIGH when the N1068 is Ready and LOW when the N1068 is Busy.

OUT

Output of data from the N1068, DC-codes protocol is used.
When the <Output> key is pressed the transmission of data will not start until a XON (DC1, 0x11h) code has been received.
The transmission is then stopped by XOFF (DC3, 0x13h or 0x93h) code has been received.
And the transmission is then restarted by XON (DC1, 0x11h) has been received.

6 Specifications

Disk type	USB Disk File system: FAT12, FAT16 or FAT32
Disk Capacity	Maximum 4GB Partition: Primary partition only
Memory	DRAM: 512KByte Flash-ROM: 512KByte
Keyboard	Eleven keys for functions including ten numeric keys.
Display	LCD with backlight. Four lines with 16 characters each.
Interfaces	Serial RS-232-C/V.24: 9-pin male connector 25-pin female connector 150 – 38400 Baud Optional Current Loop Passive/20mA: 25-pin female connector 150 – 38400 Baud
Codes	ISO, EIA and Transparent

Dimensions:	
Width	126mm (5 in)
Depth	205mm (8 in)
Height	60mm (2.4 in)
Weight	1.2Kg (2.6 lb)

Supply Voltage:	DC IN 9-24V, Mains adapter
Power consumption	10W, Maximum
Power inlet	Coaxial chassis connector. Outer diameter of plug: 5-6mm. Inner diameter of plug: 2.1mm. The unit is not polarity sensitive i.e. plus or minus may be connected to inner terminal. or +9-24V at pin 9 of the 9-pin male DB type or pin 25 of the 25-pin female DB type of the V.24/RS-232-C Interface.

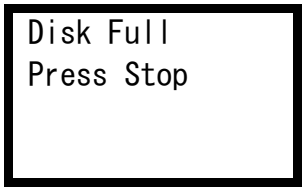
7 Error codes

7.1 Disk errors

1.

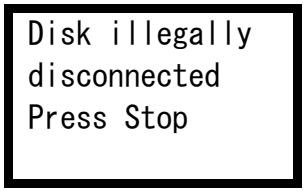
No Disk inserted. Insert Disk.

2.



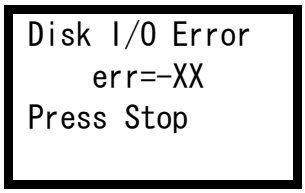
Disk Full.
Press <Stop> and return to the Ready-menu.

3.



Sense that Disk illegally disconnected.
Press <Stop> and return to the Ready-menu.

4.

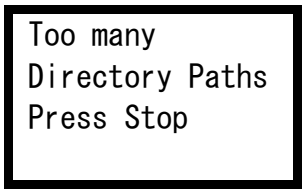


Disk Error or Hardware Error.
-XX means Error number. When -25 is shown, check if any incorrect filename will exist.
Press <Stop> and return to the Ready-menu.

5.

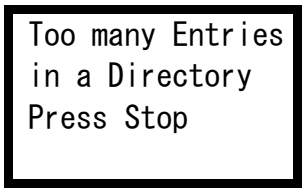
No Programs on the disk. Replace disk.
Press <Stop> and return to the Ready-menu.

6.



There are too many directory paths. Replace disk.
Press <Stop> and return to the Ready-menu.

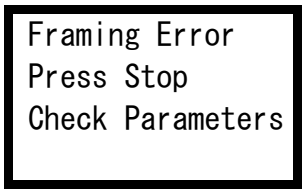
7.



There are too many entries in a directory. Replace disk.
Press <Stop> and return to the Ready-menu.

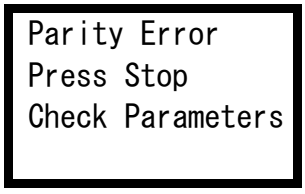
7.2 Parameter errors

8.



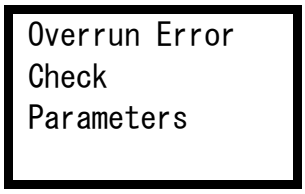
Wrong baud rate or stop bits. Check parameters.

9.



Wrong parity. Check parameters.

10.

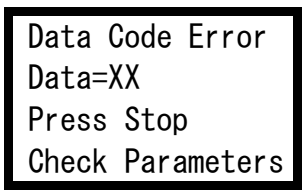


Wrong baud rate or stop bits. Check parameters.

11.

Wrong protocol. Check parameters.

12.

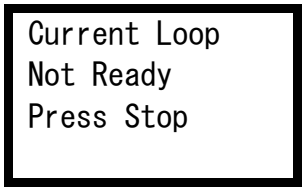


XX means data value in hexadecimal.

Wrong parity. Check parameters.

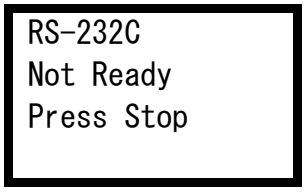
7.3 Interface errors

13.



Current loop not connected.
Insert Current loop connector

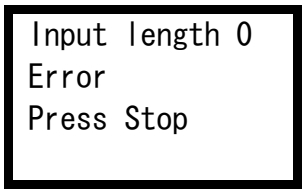
14.



RS-232C not connected or BUSY signal from host.
Connect RS-232C. Check host.

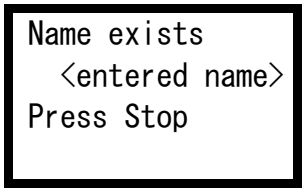
7.4 Input/Output errors

15.



No data has been received.

16.

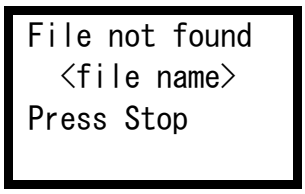


The entered name of File or Directory already exists.

17.

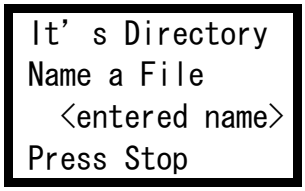
File write protected.
Remove write protection or insert new disk.

18.



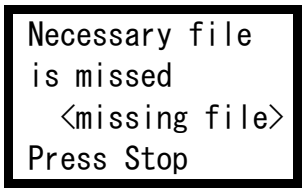
File not found.

19.



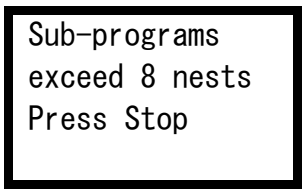
Directory name is entered incorrectly.
Filename must be entered.

20.



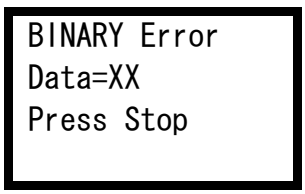
Sub-program or listed file is missed.

21.



Sub-programs must be maximum 8 levels.

22.

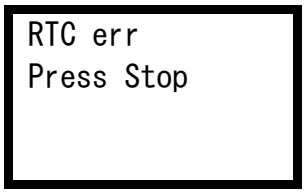


XX means data value in hexadecimal

BINARY Data error occurs at FAPT.

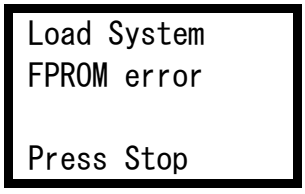
7.5 Other errors

23.



RTC Hardware error.

24.



Flash-ROM Hardware error.

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